

## AMENDMENTS TO THE CLAIMS

5 Claim 1 (Currently amended) An extrusion-free wet cleaning process for post-etch  
Cu-dual damascene structures, the process comprising:  
providing a wafer comprising a silicon substrate and at least one post-etch Cu-dual  
damascene structure, the post-etch Cu-dual damascene structure having a via  
structure exposing a portion of a Cu wiring line electrically connected with an  
10  $N^+$  diffusion region of the silicon substrate and a trench structure formed on the  
via structure;  
executing an oxidation step by applying a diluted  $H_2O_2$  solution to the wafer to  
slightly oxidize the surface of the exposed Cu wiring line; and  
washing away cupric oxide generated in the oxidation step by means of a cupric  
oxide cleaning solution containing diluted HF,  $NH_4F$  or  $NH_2OH$  having a pH of  
15 above 7; and  
~~preventing Cu reduction reactions on the  $N^+$  diffusion region connected Cu wiring  
line.~~

20 Claims 2-5 (Original)

Claim 6 (Currently amended) The process of claim 1 wherein the method of preventing  
Cu reduction reactions on the Cu wiring line comprises reducing the  $H_2O_2$   
concentration of the diluted  $H_2O_2$  solution to below 100:1 (v/v) of solvent to  $H_2O_2$ .

25 Claim 7 (Original)

Claim 8 (Cancelled)

30 Claim 9 (Currently amended) A wet cleaning process comprising:  
an oxidation step comprising a means for reducing Cu deposition on a cathode-like  
copper wiring line of a Cu-dual damascene structure, wherein the means for  
reducing Cu deposition on a cathode-like copper wiring line comprises a step of  
purging an inert gas during the oxidation process; and  
an oxide etch step for washing away cupric oxide generated in the oxidation step by  
35 means of a cupric oxide cleaning solution; and  
~~reducing Cu deposition on a cathode-like copper wiring line of a Cu dual  
damascene structure.~~

40 Claims 10-13 (Original)

Claim 14 (Cancelled)

Claims 15 and 16 (Original)

Claim 17 (Currently amended) The process of claim 9 wherein the process of reducing Cu deposition on a cathode-like copper wiring line comprises reducing the  $\text{H}_2\text{O}_2$  concentration of the diluted  $\text{H}_2\text{O}_2$  solution to below 100:1 (v/v) of solvent to  $\text{H}_2\text{O}_2$ .

5 Claims 18 and 19 (Original)